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CMCC Doc. No. 151x5-716

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SAPC 19506
COPY 1 OF 4

25X1A

To: WRSP(3)

September 12, 1957

From: R-W

Information: Headquarters ✓
WRSP(2)
WRSP(1)

DOCUMENT NO. _____
NO CHANGE IN CLASS. ☐
DECLASSIFIED
CLASS. CHANGED TO: TS S (C) 2011
NEXT REVIEW DATE: _____
AUTH. BY 70-2
DATE 12/11/81 REVIEWER: 037162

Subject: Reply to Your Field Reports Dated 6 August and 14 August 1957

From: Charles Zumba

Reply to report of 6 August 1957

1. Verified and notified.

3. This is a good way to get rid of buzzing. Changing 100k resistor to a pot should accommodate most types of Silicon diodes. Germanium can be used too, with a consequent lower output level. If the residual pulse train bothers you, we recommend the attached circuit (Fig. 2) in either transistors or vacuum tubes.

4. Make mod in first LO board as follows:

- a. remove coil from ground eyelet
- b. insert capacitor into same eyelet
- c. wrap coil lead around ground end lead of capacitor
- d. insert and use enclosed type 1428 standoffs - watch out, some are 2-56, some are 3-48 threads.

5. Transmission line adjustment is to be done in two steps.

- a. with each of the 2 boards in a test jig sweep entire frequency band of interest and tune for optimum flatness.
- b. with all boards inserted in chassis, there are 4 segment adjustments you can reach. Once more sweep entire band and adjust these 4 segments for overall optimum flatness. I will attempt to get production alignment instructions to go with this.

6. "Tuning" first LO's may have some effect on spur problems, but the fault is essentially one of the transmission line and will have to be solved there. Over activity of first LO can be checked by looking at D. C. potential of mixer cathode with LO off and then on. Shift in D. C. between the two conditions should be pretty close to 0.2V. Any less than this indicates poor conversion conductance operation of the mixer and dependence of mixer output level on level of LO injection. Much more than 0.2V implies excessive LO drive which might best be reduced by insertion of a small unbypassed cathode resistor in oscillator. Great care necessary here to insure continued operation under all environmental and tube operating point conditions.

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Reply to report of 6 August 1957 (cont'd)

From: 25X1A

7. Small potentiometers were once used here and later were discarded for reasons of lack of accessible space. Controlling LO injection is almost universally poor when no closed loop control is involved, since mixers shift in conversion conductance so rapidly with changing less than saturating high level signal injection.

8. I would think that the customer will take all the sensitivity possible without excessive lock-up, since the number of stations in the intercept range of a system will vary inversely as the second to third power of system sensitivity in μv . A higher sensitivity will permit a much greater volume of signal sources to be swept out at one pass. Of course, if getting that sensitivity implies being locked up and out of commission for 75% of the time, we will just have to get along with more sweeps encompassing less volume per sweep.

9. I think "yes". It is in later versions. The holes have been added, too.

10, 11, 12. No answer.

Unstable LO's are frequently the result of instability in misadjustment of or moving of the coils across the crystals. These are touchy and should not be touched if possible.

Reply to report of 14 August 1957

From: Charles Zumba

1. Switches are awfully easy to leave off or to accidentally knock off. A flopping cable is quite noticeable. Opinion, not directive, would say leave the switch out and continue to use the cable.

2. Do you want replacements for the two being returned?

3. Winchester printed circuit connectors must be handled with much care. When clips are used as intended, connectors have very little chance to get damaged. It may be a nuisance, but less certainly, than replacing connectors. Uneven slots should be filed out. Some of our people here do this as a matter of course with each new board. Will see about the practicability of substituting more rugged base material such as a glass melamine or dialphthylate for present material, but in the meantime,

- a. be gentle
- b. use the clips if at all practical
- c. loosen cans, locate and insert connectors, tighten cases

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